WISCONSIN DEPARTMENT OF PUBLIC INSTRUCTION

Tony Evers, PhD, State Superintendent

Project Lead the Way
Teacher Licensing
February 2011

Background

The Department of Public Instruction is committed to increasing educator license flexibility and expanding routes to certification to support district efforts to expand innovative programs and curriculum offerings to students while ensuring these programs are taught by qualified teachers. There have been licensing concerns and questions related to Project Lead the Way (PLTW) courses. These concerns and questions were addressed through a collaborative process involving multiple stakeholders and a final report was issued in February 2011 (www.dpi.wi.gov/te/pdf/pltwflexreport.pdf) The information below outlines how technology education, science, and mathematics instructors may be appropriately licensed to teach PLTW courses.

Appropriate teacher licensure

As new education standards are being introduced to schools, it is becoming increasingly important to consider the full scope of mathematics and science content that students must acquire during their K-12 education. The scope of the mathematics and science content that is required for students to be college and career ready is defined by the Wisconsin Model Academic Standards for Science or the Wisconsin Standards for Mathematics. There are a variety of courses and pathways that districts may offer in order for students to acquire the knowledge and skills needed for high school graduation. Project Lead the Way (PLTW) courses that are predominantly math and science based may be part of those options.

Additionally, districts have flexibility in determining how PLTW courses taken by students meet the Wisconsin Standards for Science or Mathematics and whether or not the course should be offered for mathematics, science or technology education credit; and whether the course(s) should be regarded as fulfilling high school graduation credit requirements for science or mathematics or offered as elective credit.

The following underlying principles should guide decisions related to credit conferred and licensing requirements.

- Course content aligns with the academic standards for the subject area.

- The type of credit (mathematics, science or technology education) awarded to students must align with the licensure of the teacher teaching the course.

- Whether or not the credit is considered an elective credit or a credit that counts as fulfilling high school graduation credit requirements is determined by the school district.

Prior task force efforts, namely the *Technology Education/Science Equivalency Task Force* and *Technology and Engineering Education and Mathematics Education Report* provide a solid basis for determining equivalency in courses, and identification of courses that are heavily math or science based and provide the greatest potential for offerings as science or mathematics credits. For a copy of the task force reports please see: http://www.dpi.wi.gov/te/terp.html

Table A outlines how PLTW courses align with mathematics and science content and set forth the foundation for appropriate teacher licensure.

TABLE A
PLTW Course Alignment with Science and Mathematics Standards

The charts below summarize how PLTW courses align with the **academic standards for science and the common core academic standards for mathematics** as determined by state level task forces convened to review the mathematics and science content in PLTW courses. The task force members included science, mathematics, and technology education professionals. For a complete copy of the reports *Technology Education/Science Equivalency Task Force* and *Technology and Engineering Education and Mathematics Education Report (*http://www.dpi.wi.gov/te/terp.html)

PLTW and Science Content		
These courses have **significant** science content.	These courses have **some** science content.	These courses have **minimal** science content.
• **Principles of Engineering (POE)** • **BioTechnical Engineering (BIO)**	• **Digital Electronics (DE)** • **Civil Engineering & Architecture (CEA)** • **Aerospace Engineering (AERO)**	• **Introduction To Engineering Design (IED)** • **Engineering Design & Development (EDD)** • **Computer Integrated Manufacturing (CIM)**

PLTW and Mathematics Content		
This course has **significant** mathematics content.	This course has **some** mathematics content.	These courses have **minimal** mathematics content.
• **Digital Electronics (DE)**	• **Principles of Engineering (POE)**	• **Introduction To Engineering Design (IED)** • **Engineering Design and Development (EDD)** • **Computer Integrated Manufacturing (CIM)** • **Civil Engineering and Architecture (CEA)** • **Aerospace Engineering (AERO)** • **BioTechnical Engineering (BIO)**

Courses in the left column are identified as having **significant** science or mathematics content. These courses could be offered by an appropriately licensed science or mathematics teacher for science or mathematics credit respectively; or by a licensed technology education teacher for science or mathematics equivalent credit. These courses have been vetted for course equivalency for graduation purposes.

Courses in the middle column most closely align with technology education standards. They are also recognized as having **some** science or mathematics content and alignment with those respective standards. Because these courses address mathematics and science standards, but not to the extent as the courses in the first column, districts need to consider how the course fits within the scope and sequence of courses and educational pathways offered to determine the type of credit awarded for purposes of high school graduation.

The right hand column lists courses that have minimal science **or** mathematics alignment with those content standards respectively; and are most appropriately considered technology education courses. Considerable supplemental content would be needed in order for the courses to be offered for either science or mathematics credit.

Another way of looking at educator licensure requirements is presented in Table B. The overriding principle is

that teacher license, course content and credit awarded must align. The table shows options described in Table A with specific reference to licensure.

Table B
Educator License for PLTW Courses
Alignment of educator license and course content.

Licensure Area	Wisconsin PLTW Courses (listed in typical sequence of offering)							
	Introduction To Engineering Design (IED)	Principles of Engineering (POE)	Digital Electronics (DE)	Computer Integrated Manufacturing (CIM)	BioTechnical Engineering (BIO)	Aerospace Engineering (AERO)	Civil Engineering and Architecture (CEA)	Engineering Design and Development (EDD)
Tech Ed	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Science		**Yes**	**Yes***		**Yes**	**Yes***	**Yes***	
Math		**Yes***	**Yes**					

Yes indicates that a teacher with the corresponding license can teach the corresponding course.

Yes* indicates that these courses are considered to include mathematics or science content to the extent that a district may choose to offer them for credit in the content area designated for the row. Within the scope and sequence of courses and educational pathways offered, a district may determine the type of credit awarded for purposes of high school graduation. The teacher license and credit awarded must align.